

BEFORE THE

ORIGINAL

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of

DOCKET FILE NO. 98-136

SEP 21 1998

Amendment to Part 27 of the
Commission's Rules To Revise Rules
for Services in the 2.3 GHz Band and
To Include Licensing of Services
In the 47 GHz Band

WT Docket No. 98-136

COMMENTS OF LOCKHEED MARTIN CORPORATION

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SUMMARY

Lockheed Martin appreciates the Commission's intention to adopt a "flexible framework" for use of the 47 GHz band, but it is constrained to observe that the proposed adoption of a channelization plan and assignment mechanism geared to a particular type of fixed service, using stratospheric platforms, has done little to bear out a desire to preserve opportunities in this band for all of the services to which it is allocated internationally, particularly satellite services. Lockheed Martin is also concerned that the Commission's suggestion that it would make Part 27 of its rules applicable to satellite uses of the 47 GHz band would prove confusing and cumbersome in practice. If provisions adopted in this proceeding are intended to apply to satellite operators at 47 GHz, they should be adopted in an affirmative way in Part 25, rather than by default application by interpretation of Part 27.

With respect to the impact domestically of actions taken at WRC-97 concerning the 47.2-47.5 GHz and 47.9-48.2 GHz bands, Lockheed Martin observes that the preferences expressed in footnote S5.552A of the Radio Regulations and in WRC-97 Resolution 122 do not preclude FSS use of the subject bands. Use of the 47 GHz band for FSS remains fully in accord with the international allocation tables. New Radio Regulation S5.552A does not "designate" these bands for use by high altitude platform stations to the exclusion of all other services, rather, within the fixed service, stratospheric platforms are the designated form of service in these two 300 MHz segments. Indeed, the presumption within the ITU is that some sharing is feasible between stratospheric and FSS stations, as the measures cited in the *NPRM* provide for coordination between operators in these services. The suspension of the processing of FSS notices is merely an interim measure, and is expected to be modified at the next WRC.

With respect to other issues raised by the *NPRM*, Lockheed Martin opposes spectrum caps for the 47 GHz bands, as they are not appropriate for satellite, or other wide-area

regional or global services, where access to large blocks of frequencies is essential and use of spectrum has traditionally been coordinated with other operators using the same frequencies. In addition, because global satellite networks are typically financed through consortia of U.S. and non-U.S. investors, it believes that only the existing statutory restrictions on common carrier ownership ought to apply in this band — allowing flexible investment will help foster the development of new services.

Lockheed Martin believes that wide-area licensing at 47 GHz would be far more desirable than a more localized approach, and it supports the Commission's move to license based on larger geographic areas, as well as the idea of licensing at least one 100 MHz pair of channels on a national basis. A national spectrum block would advance the Commission's goal of maximizing flexibility for development of different types of services.

Lockheed Martin also encourages the elimination of the requirement for "construction of one earth station per licensed service area" from the FSS "safe harbor" provision. Given the very substantial expense entailed in construction of a satellite space station, the requirement for construction of earth stations is superfluous. A company that has raised and expended the capital to construct, launch and operate a space segment facility will necessarily ensure that the ground segment necessary to provide service is also in place, but these earth stations may well be owned and operated by entities different from the space segment licensee.

Lockheed Martin also urges further scrutiny concerning the concept of using lighter-than-air balloons to hold aloft large platforms, which remains speculative and unproven. The liability and insurance issues raised in the *NPRM* are important matters that are actually beyond the scope of the Commission's expertise, but should nonetheless be addressed before

service is authorized. To this end, a more definitive technical proposal should be submitted before the service is permitted to advance any further. The Commission should strive to avoid problems similar to those it experienced with the now moribund Interactive Video and Data Service, which went forward despite uncertain technical prospects.

Finally, the very characteristics that make auctions well-suited for purely domestic terrestrial services, with their defined service areas that do not cross international boundaries, make bidding procedures particularly problematic for global satellite services. Thus, the use of auctions to assign spectrum at 47 GHz is inherently prejudicial to satellite use, and is inconsistent with the Commission's insistence that it is endeavoring to promote flexibility in the use of the 47 GHz bands. Accordingly, Lockheed Martin proposes that the Commission preserve at least one pair of 100 MHz channels in this band for national licensing, and that this band be reserved from immediate assignment for development of future services, such as EHF satellite systems.

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To: The Commission

COMMENTS OF LOCKHEED MARTIN CORPORATION

Lockheed Martin Corporation (“Lockheed Martin”) hereby responds to the Commission’s request for comments concerning the above-captioned proceeding. *See Notice of Proposed Rulemaking*, FCC 98-142, slip op. (released July 29, 1998) (“*NPRM*”). These comments focus on critical issues raised in this proceeding that have a potential impact upon the ability of the U.S. satellite industry to use the subject frequencies in the 47 GHz band for provision of the next generation of fixed-satellite services (“FSS”).

I. STATEMENT OF INTEREST

Lockheed Martin is a major aerospace and defense company specializing in the development of sophisticated spacecraft, launch systems, missiles and other high technology products. Lockheed Martin has been issued a license by the Commission to operate a global broadband geostationary FSS system known as Astrolink™ using

primary service frequencies in the Ka-Band.^{1/} It has also filed applications for two additional satellite networks for provision of FSS — its Q/V Band Satellite System^{2/} and LM-MEO System^{3/} — that would use frequencies in the Extra High Frequency (“EHF”) bands, including the spectrum at 47.2-48.2 GHz (the “47 GHz band”) that is at issue in this proceeding.^{4/} Accordingly, Lockheed Martin has a strong interest in the decisions to be rendered in this docket.

II. DISCUSSION

A. Service Rules In General

In the *NPRM*, the Commission has expressly requested input on potential use of the 47 GHz band for satellite services.^{5/} Lockheed Martin appreciates the Commission’s recognition of the satellite industry’s interest in this band, and its statement that it intends to adopt “a flexible framework that reflects the likely dominant

^{1/} See *Lockheed Martin Corporation*, DA 97-973, slip op. (IB, released May 9, 1997).

^{2/} See Application of Lockheed Martin Corporation for a Global Q/V-Band Satellite Communications System, FCC File Nos. 129 through 137-SAT-P/LA-97 (filed September 25, 1997).

^{3/} See Application of Lockheed Martin Corporation for the LM-MEO Satellite Communications System, FCC File No. 178-SAT-P/LA-97 (filed December 22, 1997).

^{4/} Lockheed Martin has varied interests in other satellite service and related markets as well, both within and outside of the United States, and has committed itself to continued expansion of this business.

^{5/} *NPRM*, FCC 98-142, slip op. at 25 (¶ 59).

use of the band, but does not preclude other uses.” *NPRM*, FCC 98-142, slip op. at 23 (¶ 52). However, Lockheed Martin is also constrained to observe that the Commission’s decision to adopt frequency assignments and assignment mechanisms geared to the needs of the fixed service — and, in particular, the desires of the proponents of stratospheric platforms — has done little to bear out a desire to preserve opportunities in this band for all of the services to which it is allocated internationally.

The Commission also seeks comment on whether the dual band nature of FSS “suggests other approaches to the application of service-specific Parts of the Commission’s Rules,” and whether any provisions in existing, service-specific rules “may require specific recognition or adjustment to comport with the supervening application of Part 27.” *NPRM*, FCC 98-142, slip op. at 24 (¶ 56). In particular, it proposes to regulate FSS uses under Part 25 of the Commission’s Rules (the current repository for satellite-specific rules), except to the extent of an inconsistency with the provisions of Part 27’s wireless rules, in which case the latter would govern. *Id.*

Lockheed Martin is concerned that this proposal to have inconsistent provisions in Parts 25 and 27, without specific pointers, would prove confusing and unwieldy in practice. Moreover, it is too open ended, in that any future changes to Part 27 rules that may create new inconsistencies with Part 25 are not contemplated in this

proceeding could become subject to the proposed "Part 27 controls" policy. This imposes a burden on satellite operators to review every proceeding with a potential Part 27 impact to ensure that possible inconsistencies with Part 25 provisions are addressed in the promulgation proceeding, rather than in some kind of enforcement action down the road. If the Commission intends to make rule provisions apply or not apply to satellite operators as the case may be, it should do so in an affirmative way in Part 25, rather than by a default application by interpretation of Part 27.

The *NPRM* also specifically takes note of restrictions that were adopted at the 1997 World Radiocommunication Conference ("WRC-97") with respect to new registrations in the 47.2-47.5 GHz and 47.9-48.2 GHz bands for uses other than BSS feeder links and fixed terrestrial facilities.^{6/} The Commission has asked that potential service providers address "the implications of any departure from the international allocations such services or service configurations may raise . . . and [to] describe the circumstances that in their view support such uses." *NPRM*, FCC 98-142, slip op. at 25 (¶ 57).

Lockheed Martin observes that the impact of the preferences expressed in the Radio Regulations and in WRC-97 Resolution 122 is not so broad and preclusive as the *NPRM* seems to imply. The allocation of the band segments 47.2-47.5 GHz and

^{6/} See Footnote S.5.552A and Resolution 122, WRC-97 Final Acts at 67 and 478-79 (ITU 1997).

47.9-48.2 GHz to the FSS, for use by both geostationary and nongeostationary satellites, was not changed by WRC-97; use of the 47 GHz band for FSS remains fully in accord with the international allocation tables. Contrary to the *NPRM*, new ITU Radio Regulation S5.552A does not "designate the 47.2-47.5 GHz and 47.9-48.2 GHz bands for use by high altitude platform stations (HAPS)." *See NPRM*, FCC 98-142, slip op. at 25 (¶ 58). Instead, the regulation states that "[t]he allocation to the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz is designated for use by high altitude platform stations." Radio Regulation S5.552A (emphasis added). In other words, HAPS is the designated form of fixed service in the specified 600 MHz of spectrum. Radio Regulation S5.552A has no bearing whatsoever on the relationship of the fixed service in those band segments to the FSS and mobile services which have co-primary allocations with the fixed service.^{7/}

Just as there is no prohibition on access to the entire 47.2-48.2 GHz band by HAPS stations, Radio Regulation S5.552A and Resolution 122 pose no bar whatsoever to access to the subject 600 MHz by FSS networks. Indeed, the presumption in the ITU is that sharing of some kind between satellite and HAPS users is

^{7/} To the extent that Radio Regulation S5.552A also makes the allocation subject to Resolution 122 from WRC-97, Lockheed Martin notes that the operative portions of that resolution are dedicated to the facilitation of coordination between fixed and other co-primary services in the affected 600 MHz of spectrum, and establishes some temporary processing guidelines for the Radiocommunication Bureau. *See* Resolution 122 (WRC-97), WRC-97 Final Acts at 478-79 (ITU 1997).

feasible, as these measures specify between them that coordination is to occur between stratospheric and FSS stations, and that the suspension of the processing of certain FSS notices that was directed in Resolution 122 is clearly an interim measure to be reviewed at the next WRC, and is expected to be modified at that time.

The *NPRM*, in short, has apparently misconstrued the import of WRC-97 actions with respect to the HAPS subset of fixed services. Clearly, co-frequency operation of FSS and HAPS systems is contemplated in the 47 GHz band. What Lockheed Martin supports in this proceeding is the adoption of service rules for wireless services at 47 GHz that do not impact negatively on the ability of at least some FSS systems to use the same frequency bands. If this means heightened technical oversight of wireless services is required by the Commission, including potential requirements on wireless services to mitigate interference to or accept some interference from co-frequency FSS systems, that seems to be a small price to pay for a significant step in the direction of maximization of efficient use of the radiofrequency spectrum.

B. Application, Licensing and Processing Rules

Eligibility; Spectrum Aggregation -- The Commission tentatively concludes in the *NPRM* that it will not impose any threshold eligibility requirements or a cap on aggregation of spectrum within the 47 GHz band. Nonetheless, it seeks comment on possible imposition of a limit on spectrum aggregation applicable to the

millimeter wave bands as a whole, and whether there may be appropriate alternative mechanisms to protect against concentration of control. *See NPRM*, 98-142, slip op. at 30 (¶ 73).

Lockheed Martin strongly believes that spectrum caps are inappropriate for satellite, or other wide-area regional or global services, where access to large blocks of frequencies is essential, and use of spectrum has traditionally been coordinated with other operators using the same frequencies, *e.g.*, for operation at different orbital locations. Services in this band, whether satellite or terrestrial, will compete with existing operators that use other frequency bands.

Foreign Ownership Restrictions — Although the Commission proposes to require all applicants to submit alien ownership information, it does not suggest application of foreign ownership restrictions beyond those required for providers operated as common carriers under Section 310(b) of the Communications Act. *See NPRM*, FCC 98-142, slip op. at 32 (¶ 78). Lockheed Martin concurs that no additional regulations with respect to foreign ownership are warranted. Because global satellite networks are typically financed in creative ways through consortia of U.S. and non-U.S. investors, only the existing statutory restrictions ought to apply in this band. Allowing flexible investment for these non-common-carrier systems will help foster the development of new services and satisfy the Commission's obligations to promote open

markets under the WTO Agreement. The Commission must take particular care to avoid imposing any requirements that are inconsistent with the obligations assumed by the United States under that accord.

Size of Service Areas for Geographic Area Licensing — In the *NPRM*, the Commission abandoned its initially-stated intention to use 51 Metropolitan Trading Areas for licensing at 47 GHz, and instead proposes to use substantially larger Regional Economic Area Groupings, which divide the country into a dozen areas. *See NPRM*, FCC 98-142, slip op. at 34-35 (¶ 85). Lockheed Martin endorses in principle the Commission's move to license based on larger geographic areas. At the present time, the fixed and FSS services that have applied to the Commission for authority to use this band are each designed to provide wide-area services that are, at the least, regional in scope. It will likely be easier and more efficient for users requiring smaller slices of spectrum to seek agreements with licensees of these larger spectrum blocks — which may be to their mutual advantage — than it would for those requiring the ability to use frequencies over wide areas to attempt aggregation of licenses for small geographic areas.

Indeed, Lockheed Martin believes that the Commission's indication that it would consider licensing one or more of the 100 MHz channel blocks on a national basis is an idea that should be implemented. *See NPRM*, FCC 98-142, slip op. at 35

(¶ 87). This approach would, as the Commission observes “save time, money, and other resources, and also expedite the development and offering of services.” *Id.*

Establishing a national spectrum block, instead of basing all channel pairs on regional areas, would create different types of business development opportunities and thus promote the Commission’s goal of maximizing flexibility for development of different types of services.

Of particular relevance to Lockheed Martin is the fact that providing for one or more licenses of national scope could at least keep the prospect for satellite service use of this band alive and economically viable, and, as noted below, would preserve some opportunity in this band for satellite services.^{8/} Accordingly, in view of the incompatibility of using competitive bidding methods for assignment of spectrum for satellite services, Lockheed Martin urges that this national license should be withheld from any near term spectrum auction, and preserved for future development.

Performance Requirements — Lockheed Martin agrees with the Commission’s proposal to codify existing “safe harbor” performance standards for system buildout, and to adopt additional criteria for other services, including satellite services, that may be offered in both the 2.3 GHz and 47 GHz bands. However, it does

^{8/} The Commission is well aware, based on its considerable experience in the regulation of satellites, that the service areas for space-based facilities are necessarily quite broad, often global, in scope, such that the adoption of an local-area-based licensing scheme excludes satellite services as a practical matter.

not believe that it is necessary to include the requirement for "construction of one earth station per licensed service area" in addition to the mandate that the licensee launch one satellite at the end of the initial ten year license period. *See NPRM*, 98-142, slip op. at 36-37 (¶ 90).

Given the very substantial expense that the construction of a satellite space station requires, Lockheed Martin is of the view that the proposed requirement for construction of individual earth stations adds nothing of value to the Commission's desire to prevent warehousing of spectrum. Any company that has raised and expended the capital to construct, launch and operate a space segment facility has an undeniable economic incentive to ensure that the ground segment necessary to provide service is also in place. However, given the manner in which global and regional satellite services have been offered traditionally, these earth stations may well be owned and operated by entities different from the space segment licensee. Accordingly, the Commission should only require the 47 GHz licensee to launch and operate a satellite, and forgo the proposal to require that the licensee also take responsibility for constructing specific ground segment facilities.

Disaggregation and Partitioning of Licenses — Lockheed Martin supports the Commission's proposal to permit both disaggregation of multiple licenses and partitioning of single 100 MHz authorizations. *See NPRM*, FCC 98-142, slip op. at 38

(¶ 95). Disaggregation and partitioning will promote flexible use of spectrum, and permit divisions leading to the most efficient exploitation of the resource. There would not appear to be any need to impose any limits on these arrangements.

With respect to the proposals for applying the ten-year substantial service requirement where licensed spectrum has been partitioned or disaggregated, Lockheed Martin prefers the Commission's second alternative, *i.e.*, allowing the original licensee to assume responsibility for buildout with no adverse consequence to the assignee if the original licensee fails to meet this obligation. *See NPRM*, FCC 98-142, slip op. at 40-41 (¶ 100). This would facilitate down-stream acquisition of spectrum for satellite use without forcing the acquirer to rush to bring frequencies into use quickly

C. Operating Rules

The Commission has sought input on whether to include an Equal Employment Opportunity ("EEO") provision in Part 27 and, if so, which of its EEO procedures it should adopt for the services regulated under Part 27. *See NPRM*, FCC 98-142, slip op. at 46 (¶ 113). Without regard to the Part 27 aspect of the question, Lockheed Martin does not believe that there is a need to adopt a separate EEO requirement for satellite operators in this proceeding. Certain satellite operators (generally excluding most commercial FSS network operators) are subject to requirements that have already been established in other parts of the Commission's

rules, such as those applicable to common carriers and to satellite broadcasters. There is no reason to single 47 GHz band satellite operators out for dissimilar treatment.^{9/}

D. Technical Rules

Lockheed Martin believes that, given the Commission's desire to maintain flexibility in these bands and allow a variety of services to develop, the establishment of technical requirements is likely to be the most difficult aspect of this proceeding. As a practical matter, it is interested in reviewing the opinions on technical compatibility that may be advanced by other commenters and responding to any concerns that may be raised. As the record in the docket develops, it could be necessary for supplemental comments and other presentations to resolve issues that may arise.

For example, the Commission proposes to require all licensees in the band to attenuate the power below the transmitter power (P) by at least $43 + 10\log_{10}(P)$ or 80 decibels, whichever is less, for any emission on all frequencies outside the licensee's authorized channel. *See NPRM*, FCC 98-142, slip op. at 51 (¶ 131). At present, it is not yet clear whether fixed service constraints are adequate for stratospheric services, or

^{9/} This is, however, one area where the danger of the Commission's proposed "Part 27 controls" policy becomes apparent. EEO obligations for satellite operators have been decided on a situation-by-situation basis over the years. To the extent that such obligations are deemed appropriate for wireless providers and included in Part 27, the Commission's proposed policy of having Part 27 controls in the event of inconsistencies with Part 25 could lead to the unintentional imposition of such obligations on FSS operators at 47 GHz. This result, if nothing else, would place 47 GHz FSS operators at a disadvantage vis-a-vis other FSS operators.

whether more stringent requirements are necessary for such stations to protect adjacent channel operations of both fixed services and other services (such as satellite) that may be provided. In view of the likelihood of FSS operations in the adjacent band beginning at 48.2 GHz (and perhaps even between 47.5 and 47.9 GHz), close scrutiny of this out-of-band emissions limitation will be necessary. Preliminary technical observations, however, are that the 80 dB figure may warrant modification in order to encourage the wide-spread use of low-cost equipment.

E. Public Safety Concerns Relating to Stratospheric Platforms

The Commission has also requested comment on public safety issues surrounding the use of stratospheric platforms suspended above the surface of the earth, including what body would take responsibility for certifying the safety of these platforms, whether their operation should be subject to principles of strict liability, and whether licensees should be required to provide proof of adequate insurance to compensate for any damage and injury resulting from their operation. *See NPRM*, FCC 98-142, slip op. at 55-56 (¶¶ 142-145). While some of these issues may lie outside the scope of a Commission proceeding, Lockheed Martin believes that the fact that they are being raised highlights that the concept of using lighter-than-air balloons to hold aloft large platforms remains highly speculative and wholly unproven. The Commission itself is not in a position to resolve the liability and insurance issues that it notes, but

such uncertainties must necessarily be settled before such a service can be considered viable and licensable. To this end, the Commission should request the submission of a more definitive technical proposal from those advocating this service before it commences the licensing process.

An unsubstantiated finding that a particular service model will be the "dominant use" of spectrum may result in the consignment of very valuable spectrum resources to long-term disuse that ultimately inures to the competitive disadvantage of U.S. industry — possibly industries, if both satellite services and more traditional varieties of fixed service operations are delayed until the HAPS concept has run its course. Indeed, even in instances where the Commission has followed more regularized allocation procedures, it has sometimes fallen victim to the allure of unproven new technologies touted by entrepreneurial companies. *e.g.*, the Interactive Video and Data Service ("IVDS").^{10/} Notably, IVDS, like the "high altitude platform service," was a service concept promoted almost entirely by a single, start-up venture with uncertain technological feasibility. Lockheed Martin cannot help but note that the technical and strategic obstacles the HAPS proponent has laid out for itself are orders of magnitude more imposing than those that ultimately were the downfall of the IVDS.

^{10/} See Mike Mills, "Interactive TV Dream Fades for Licensees: Some Say FCC Hyped Unproven Technology," *Washington Post*, at A1 (February 17, 1997).

F. Competitive Bidding Procedures

The Commission has proposed in the *NPRM* to adopt general competitive bidding rules, as set forth in Part 1, Subpart Q of the Commission's Rules. *See NPRM*, FCC 98-142, slip op. at 56-58 (¶¶ 145-151). Lockheed Martin questions the consistency of this proposal with the Commission's desire, stated elsewhere throughout the *NPRM*, to allow maximum flexibility with respect to the types of service that may be offered. Use of competitive bidding to assign spectrum is tantamount to prohibiting its use for satellite services because the very characteristics that make auctions well-suited for purely domestic terrestrial services, with their defined service areas that do not cross national boundaries, make bidding procedures particularly ill-suited for global satellite services. Moreover, the size of the spectrum blocks that the Commission proposes to use is likely to be a very substantial impediment to use by most types of satellite systems. Finally, auctioning the rights to spectrum that is allocated for global or regional satellite services would also raise issues of international comity and reciprocal entry that could very well endanger the viability of commercial transnational satellite services.

For these reasons, in conjunction with Lockheed Martin's suggested preservation of at least one pair of 100 MHz channel blocks for national licensing, the Commission should also reserve this spectrum block from immediate assignment and

preserve it for development of future services, such as EHF satellite systems. In view of the Commission's recent experience with auction revenues falling short of expectations, the fact that only one entity has advanced a detailed proposal to use the 47 GHz band for wireless services (in contrast with more than one dozen satellite companies), and suggestions by some that it is imprudent to auction too much spectrum simultaneously, such an approach would seem to be the only one consistent at this juncture with principles of sound spectrum management.

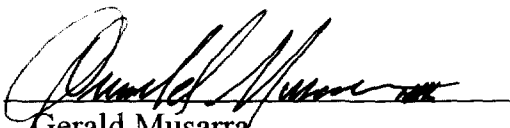
CONCLUSION

Lockheed Martin urges the Commission to adopt service rules for the 47 GHz band that are consistent with the views it has expressed above. As it conducts this proceeding, the Commission should strive to fulfill its promise to maintain the maximum amount of flexibility for use of these bands, thereby permitting use by the widest range of potential services and technologies.

Respectfully submitted,

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